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Soil
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Service



Soil & Water Conservation News

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Agriculture Hard Hit by Volcano

by Duane A. Bosworth

At 8:32 a.m. on Sunday, May 18, Mount Saint Helens in southwestern Washington literally blew apart. Geologists estimate that 1 ton of ash and mud for every person in the world blew into the air or slid down the mountainside. They also estimated the explosive force at 50 million tons of TNT.

Rick Pudney, Soil Conservation Service area range conservationist in Yakima—85 miles east-northeast of

the mountain—described the arrival of the huge ash cloud as eerie. "It started to get dark about 9:15," said Pudney, "and within 15 minutes it was pitch black. Darker than the darkest nights because there was no sky, no stars, no moon. You could barely see the length of your arm." Pudney described the day-long ashfall as a stillness somewhat like you might experience during a heavy snowfall. Absolute quiet. The heavy ashfall covered most of six counties in eastern Washington and three agricultural counties in Idaho with ash depths ranging from one-half inch to 4 inches.

Early estimates of damage to agriculture have been set at \$400 million. Alfalfa appears to be most heavily damaged. Where the first cutting was already on the ground, turning the swaths several times failed to shake off the ash—but did knock off many leaves. The hay will be very low quality. Standing alfalfa, with its broad leaves and soft stems was badly lodged and may not be harvestable.

In the heart of the Palouse country, the pea and lentil center of the United States, the young broad-leaved plants were weighted down by the

Continued on next page

USDA Studies Its Better Half

The U.S. Department of Agriculture (USDA) is seeking the answers to some unprecedented questions: "If today's farm woman is, as many claim, a working partner of her husband, then isn't she a farmer, too? Is she getting fair treatment as a legitimate client of USDA?"

These and other relevant questions are being explored thanks to a 2-year program established by USDA in March 1979 called the Farm Women's Project (FWP). The FWP, directed by attorney Carol Forbes, is putting together the first known profile on farm women in relation to USDA. The profile will address the degree of involvement and characteristics of farm women in agency farm programs. The first nationwide survey of farm women will be conducted.

The survey, conducted this summer by the National Opinion Research Center of Chicago under a cooperative agreement with USDA, is polling 4,100 farm and ranch households. "The intent of the survey is to provide a record of farm women's ex-

periences with USDA services and farm programs and their perceptions of the Department," Secretary of Agriculture Bob Bergland explained. "It will also provide us with a knowledge of women's roles in making farm management decisions. This knowledge will help the Department better serve the needs of farm women who can and do use USDA programs, and it will help identify opportunities where women can participate in USDA farm programs at management and advisory levels."

FWP is also studying the legal rights of farm women in relation to USDA programs and services. The review will: (1) identify USDA programs, services, and funds for which farm women are eligible; (2) determine the current rate of participation by women in programs; (3) identify USDA jobs for which they qualify and cite present job participation by farm women in such positions; and (4) study the involvement of farm women in policy and management decisions of USDA agencies.

Other projects of the FWP include developing a brochure describing job opportunities within the Department

for farm women, and a brochure explaining how USDA programs work, where decisions are made, and how women can participate in the decisionmaking process. A projected Farm Women's Equity Act will be written to correct legislative and administrative misconceptions about farm women and establish an outreach program.

The director, Carol Forbes, initiated and founded the Farm Women's Project. An attorney and former farm owner herself, Forbes was able to convince Secretary Bergland early in 1979 that "the Department needs to know more about the needs and opinions of today's farm women and be more responsive to them."

Forbes feels that "the availability of accurate data will enable the Secretary of Agriculture to target USDA resources at weak areas, change regulations, and influence future policy in service and program areas." In general, the persevering farmer/attorney/crusader hopes that the Farm Women's Project will bring about a greater awareness of the economic contributions of all farm women.

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Agriculture Hard Hit, cont.

ash, and the crop loss is estimated at about 40 percent, according to Karl Kler, SCS district conservationist in Ephrata, Wash.

Chemical tests show that the ash is not as acid as first feared with pH ranging from 5.5 to 6.8. However its 63 percent silicon dioxide content makes it extremely abrasive to motors and engines as well as human lungs. The ash also contains 15 percent aluminum, 4 percent iron, 4 percent calcium, 1.5 percent magnesium, 1.5 percent potassium, 0.34 percent sodium, and other materials.

Yakima Valley's extensive apple, pear, peach, and apricot orchards may have escaped extensive damage

according to Hans Krauss, SCS agronomist for Washington State. Orchardists turned on their wind machines after the first heavy ash fall to knock off the heaviest material. They then ran their sprinklers to flush off the fine material. "It's probable the fruit quality will suffer," Krauss said, "but the yield should not."

Still to be determined is the effect of the abrasive ash on livestock. They definitely will ingest some of the ash as they graze, but the long range damage is still a question.

Many irrigators will find their water loaded with ash that will be hard on pumps and nozzles until flushed from the water supply.

Many dairymen dumped milk be-

cause the trucks could not drive to their farms for several days to pick up what milk was stored in onfarm tanks.

Bees, essential to the alfalfa seed and fruit production of the area, suffered heavily as the fine ash dusted their wings and made flight impossible.

The volcano's effect on agriculture is still not fully measured. But by the end of the summer farmers will surely have had more than enough of this natural disaster.

Duane A. Bosworth,
head, Information Staff, West Technical Service
Center, SCS, Portland, Oreg.

RCA Update

During the January 28 to March 28 Soil and Water Resources Conservation Act (RCA) public review period, nearly 68,000 written responses were received at the RCA Response Analysis Center (RAC), Athens, Ga. The responses included personal letters, postcards, transcripts of the 18 regional RCA meetings, and prepared response forms. About 60 percent of all responses were submitted on one of the 104 different response forms received at the RAC.

At the RAC, all citizen responses were numerically coded onto special computer scanner forms and processed for errors. The information was then transferred to computer tape at the University of Georgia computer center.

Following the closing of the RAC on May 2d, the scanner forms and computer tapes were shipped to USDA offices in Washington, D.C. There a special Public Response

Evaluation Team, consisting of analysts, editors, public participation specialists, and USDA employees who had worked at the RAC, was formed. Their responsibility was to evaluate the information received during the public review period and prepare a narrative report of the nature and substance of citizen comments about the proposed conservation objectives, alternative strategies, assumptions and projections, and other elements of the RCA process.

In late June, the RCA Coordinating Committee received the Response Evaluation Team's report. The committee is now reviewing the contents of the report. Using this information, in conjunction with the Lou Harris-USDA public opinion poll about conservation, the committee will prepare USDA's recommended soil and water conservation program.

The next step will be presenting the recommended program to Secretary of Agriculture Bob Bergland. Following this step by the Secretary, a recommended conservation program will be published and made available to

the public for review and comment.

After completion of public review and consideration of comments, USDA will present the recommended program to the President who will send it to Congress.

There is considerable interest about the number of comments received during the 60-day RCA public review period. The official number of comments received follows.

Responses Received, by State	
Alabama	1,050
Alaska	37
Arizona	129
Arkansas	5,385
California	1,526
Caribbean	1,326
Colorado	1,488
Connecticut	220
Delaware	164
District of Columbia	82
Florida	1,182
Georgia	3,490
Hawaii	383
Idaho	543
Illinois	2,176

Bob Bergland
Secretary of Agriculture

Norman A. Berg, Chief
Soil Conservation Service

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sex, age, or national origin.

Comments:

from the
SCS Chief

The amount of sediment and accompanying pollutants that washes off the land from urban and developing areas and enters our streams, rivers, and lakes must be reduced. Each year stormwater runoff at construction sites carries too many tons of soil to water bodies.

Unchecked stormwater runoff rushes to stream systems in greater quantities and with more force than water that has been diverted or filtered by vegetation or diversion structures, causing accelerated erosion of streambanks and more sedimentation.

The Soil Conservation Service, in partnership with soil and water conservation districts, knows more about sediment control in rural and urban areas than any other agency. Many of the same practices that control erosion and catch sediment in agricultural areas can be applied in urban settings. But to be really effective in protecting soil and water resources, we must get involved early in the planning of development. Options are limited when a community is asked to remedy problems after grading and construction are completed.

As the lead agency in the Cooperative Soil Survey program, SCS has the expertise for identifying site limitations for development. We have the background for estimating the amount of erosion that would occur on certain soils under certain conditions, and we have the engineering skills and plant materials knowledge to avoid or at least reduce damage to our natural resources in developing areas.

SCS and local conservation districts must work with developers and community planners in designing stormwater runoff management systems that will meet their current needs and future circumstances. Together we can help communities keep the amount of soil washed off the land at pre-development or other tolerable levels.



Indiana	1,118	New Hampshire	146	Utah	535
Iowa	1,865	New Jersey	137	Vermont	505
Kansas	1,235	New Mexico	357	Virginia	959
Kentucky	3,156	New York	1,390	Washington	980
Louisiana	1,213	North Carolina	1,948	West Virginia	326
Maine	550	North Dakota	906	Wisconsin	3,090
Maryland	560	Ohio	1,513	Wyoming	175
Massachusetts	278	Oklahoma	3,637	Total	67,967
Michigan	4,093	Oregon	638		
Minnesota	2,115	Pennsylvania	1,495		
Mississippi	1,875	Rhode Island	81		
Missouri	1,669	South Carolina	1,286		
Montana	1,810	South Dakota	877		
Nebraska	349	Tennessee	1,977		
Nevada	250	Texas	3,693		

Tom Levermann,
member, RCA Public Participation Team, SCS,
Washington, D.C.

News Briefs

Soil Surveys and the Tax Assessor

Wayne Atchley has been the county tax assessor in Teton County, Idaho, for 14 years. During this time he has worked continuously to improve and refine his land appraisal procedure.

Atchley has always wanted to develop and use the fairest system of evaluation possible. One of his primary goals in working with agricultural land has been to develop an appraisal system based upon the productive capacity of the land, rather than on who was managing the land or how they were managing the land. In working toward this goal, he found the Teton area soil survey, which he obtained from the Teton Soil Conservation District, to be an invaluable tool.

The soil survey provided him with an inventory of the entire county's soil resources. It also provided information on crop yield and soil productivity estimates.

After realizing the value of the soil survey, Atchley began learning how to use it and adapt it to the needs of his appraisal work. He traveled on horseback to inaccessible areas of the county verifying land use changes and checking for areas where he had questions relating to the soils.

Atchley also spent much time working with former Soil Conservation Service Soil Scientist Jack Harwood. Before he retired, Harwood assisted Atchley in developing a soil productivity index for each soil in Teton County. The soil productivity index provides a measure of the soil contribution in crop production and forms the basis of Atchley's appraisal system for agricultural land.

By using the soil survey and establishing a productivity index for each soil, Atchley can appraise more

equitably because he bases the appraisal on production capacity of the soil rather than on political or personal biases. In this way, Atchley accomplished his goal of a fair appraisal system.

Another important advantage derived from the use of the soil survey has been reduced cost to the county. By having soil information readily available and a soil productivity index prepared, Atchley has been able to save time and money in performing his field appraisals.

Atchley says that the time and effort involved in developing this type of appraisal system have been well spent. His evaluation procedure has been very acceptable to the landowners of Teton County.

Anthony R. Bennett, was district conservationist, SCS, Driggs, Idaho, and is now district conservationist in Arco.

Getting the Wood Out

Under Public Law 566, Snyder County, Pa., is one of the sponsors of a small watershed project and has purchased 790 acres of land for a flood control dam and recreation lake. Before the bulldozers move in to clear the area that will be under water, the county commissioners are making wood from the site available to county residents.

First, the commissioners had the Pennsylvania Bureau of Forestry survey the trees for valuable timber. After selling the timber, the commissioners asked the Snyder County Conservation District to oversee a permit system for selling the remaining wood as firewood.

Craig Bingman, executive assistant for the district directors, sprayed the trees with orange paint to delineate boundaries for wood cutting. He issues maps and guidelines along with the permits and monitors the system.

Through the end of February 1980, he had issued 101 permits.

The money earned from the firewood permits will be used to offset the costs of the recreational part of the project which is not covered under Public Law 566. At the same time, the wood cutting permit system gives local residents an opportunity to save money on their fuel bills.

Prehistoric Site Eroding

Off-road vehicles (ORV's) are rapidly destroying one of the oldest historical sites in Indiana, the Pyramid Indian Mound just south of Vincennes.

Owners of dirt bikes and four-wheel-drive vehicles use the mound as a site to ride their ORV's, causing extensive gullying and erosion.

The Indiana State Highway Department, which had owned the property on which the mound is located since the mid-1960's when it was purchased for a highway bypass, transferred ownership of the property to the Knox County Park and Recreation Board. The board intends to rehabilitate the mound and make the 3-acre site into a roadside picnic and park area.

Action to save the rapidly eroding Indian mound was initiated by the local Audubon Society. At the request of the society, Marion Mason, Soil Conservation Service district conservationist, estimated that \$1,000 would be needed to restore the mound. He recommended pushing soil up from the bottom of the mound to fill in the gullies then seeding the mound to tall fescue and crownvetch. He also said that ORV's would have to be banned from the mound to prevent further erosion.

Based on an article by Duane Chattin in the August 1, 1979, issue of the *Greater Vincennes Shopper*.

Crop Rotation May Become Popular Again

Higher fuel costs and other farm expenses may help make "old-fashioned" crop rotation practices popular again. The use of crop rotation has dropped 20 million acres in the last decade as many farmers switched to planting continuous cash crops when fuel and petroleum-based fertilizers were plentiful. Now, with fuel and fertilizer prices high, many farmers may return to rotation practices. A rotation system including alfalfa could reduce nitrogen application in many parts of the Corn Belt by as much as 50 pounds per acre, a 20-percent savings in nitrogen costs on the first corn crop after alfalfa.

Collecting Plants for Conservation

The USDA Soil Conservation Service Plant Materials Center at Bismarck, N. Dak., doesn't do things in a small way, especially when it comes to collecting plants for testing.

The plant materials center (PMC) recently completed a collection of native little bluestem. A total of 588 sites were vegetatively sampled by SCS field office personnel in nearly every county in North Dakota, South Dakota, and Minnesota. Little bluestem is a native warm season bunchgrass and at one time was the most abundant grass in the Great Plains States. The Bismarck PMC is collecting little bluestem because of the need for an adapted variety for range seeding, surface mine reclamation, critical area plantings, recreational development, and other conservation uses in the northern Great Plains.

The project involved the collection of six (6-inch by 6-inch by 8-inch

deep) vegetative plugs from each site to get a broad genetic base collection.

After delivery to the PMC, two individual plants were taken from each vegetative plug, placed in pots, grown in the PMC greenhouse, and transplanted to a space plant nursery in the spring.

This procedure resulted in more than 7,000 plants to test and evaluate. Each plant will be evaluated for its growth rate, seed production, and resistance to disease, cold, drought, and insects. Selected individual plants will be combined into one or more varieties for further testing off the center under actual growing conditions on soil conservation district cooperators' land.

Little bluestem is not the first broad genetic base collection in which the Bismarck PMC has been involved. A cooperative project with the USDA Science and Education Administration-Agricultural Research, Great Plains Research Center, was initiated in the fall of 1977. The project involved the collection of native blue grama and western wheatgrass. More than 1,000 sites in western North Dakota and South Dakota were sampled and over 20,000 plants were transplanted to a space plant nursery covering nearly 15 acres. This is the largest and most intensive collection of these two native grass species in existence and is an excellent example of cooperative efforts between the Soil Conservation Service and the Agricultural Research branch of the Science and Education Administration.

The PMC has not limited itself to large collections of grasses. In the past 2 years, it has also made extensive collections of native woody shrubs such as chokecherry, silver buffaloberry, and hawthorn through-

out North Dakota, South Dakota, and Minnesota. More than 150 samples of each of these species have been assembled.

The PMC plans to develop and cooperatively release one or more varieties of each of the selected species to commercial growers for production of certified seed.

Russ Haas,
manager, plant materials center, SCS,
Bismarck, N. Dak.

Conservation Tillage Saves Soil and Oil

"If farmers want to hold fuel costs down, their best bet is less tillage," says William A. Hayes, Soil Conservation Service agronomist in Lincoln, Nebr.

Figures compiled in October 1979 by USDA show that the price of diesel fuel delivered to farms rose 77 percent during the last year, and gasoline went up 51 percent.

Conventional—or "clean"—tillage, which most farmers use today, requires an average of 7.4 gallons of fuel per acre to grow a crop. In conventional tillage, the moldboard plowing, disking, and other operations require many trips over the same field.

A no-till system, in which the soil is not touched until planting time, and residues from earlier crops are left on the field, requires only about 1.25 gallons of fuel per acre.

"There is no doubt about it," said Hayes, "conservation tillage not only reduces fuel consumption to about one-sixth of that required for ordinary tillage operations, but also reduces soil erosion 50 to 90 percent."

Natural Resource Agencies Develop Common Classification and Inventory Methods

Five Federal agencies have joined forces to develop a nationwide system for gathering, storing, analyzing, and retrieving natural resource information. The agencies are the Soil Conservation Service and the Forest Service of the U.S. Department of Agriculture and the Bureau of Land Management, the Fish and Wildlife Service, and Geological Survey of the U.S. Department of the Interior.

The effort is in response to recent legislation directing Federal agencies to coordinate data collection efforts and to develop standard inventory and analysis procedures.

The agencies' major goals are developing a common classification system for soil, which will be classified according to the Soil Taxonomy and the National Cooperative Soil Survey, and for vegetation, water, and landforms; developing a dictionary of common terminology to facilitate communication among the agencies; coordinating what and how renewable natural resources will be inventoried; and coordinating how data will be stored, tabulated, analyzed, and exchanged.

To accomplish the objectives of the agreement, personnel from each Federal agency are assigned to a policy group, program coordination group, research support groups, and technical work groups.

Three State organizations are participating in the effort—the Council of State Governments, the Council of State Planning Agencies (an affiliate of the National Governors' Association), and the National Conference of State Legislatures.

Work under the Interagency

Agreement Related to Classifications and Inventories of Natural Resources has been underway since 1978.

No-Interest Loans Boost Range Improvement in Utah

Private rangeland owners and operators in Utah receive no-interest loans for range improvement work with up to 15 years to pay at a 4 percent initial management charge through the Utah Rangeland Development Fund. The purpose of the fund is to help conserve Utah's renewable resources and increase the productivity of Utah's grazing land through proper range management.

According to Merlin Boswell, Soil Conservation Service State resource conservationist for Utah, \$2 million for 100 range improvement plans has been approved since the State fund became effective in April 1976. Each year since then, ranchers in Utah have accomplished about 25,000 acres of brush management; 100,000 acres of planned grazing systems; 10,000 acres of range seeding; 50,000 acres of deferred grazing; 100,000 acres of proper grazing; 50 water facilities including ponds, spring developments, and wells; 25 miles of pipeline; and 60 miles of fencing.

About 400,000 acres of Utah's rangeland has been treated so far through the no-interest loan program.

To qualify for the State loans, each rangeland improvement project must be part of an approved conservation plan. The Soil Conservation Service and conservation districts provide technical assistance to landowners and operators with conservation planning.

Working to Save the American Chestnut

SCS Plants Chestnut Seedlings

The long-ailing American chestnut tree is getting help from the Soil Conservation Service in the State of Kentucky. SCS Forester Charles Foster carried out a trial planting of chestnut seedlings. The seedlings, supplied by a private research firm, had been treated with radiation in an attempt to produce a strain of American chestnut which would be resistant to the devastating chestnut blight.

Foster planted about 300 seedlings on an acre of strip mine land that had been revegetated with grasses by the coal company, and with experimental plots of warm season grasses, legumes, and autumn olive shrubs by the nearby SCS plant materials center. At the end of the first growing season, the survival rate of the irradiated seedlings was about 85 percent.

Foster plans a second planting this spring on the same strip mine site in Kentucky. This time he will use American chestnut seedlings which have not been treated with radiation as a control—in order to make comparisons between the two stands of chestnuts on growth rate, survival rate, and resistance to disease.

The trials will test the success of the radiation research as well as determine the feasibility of using the chestnut tree to reclaim strip mine land.

During the turn of the century, the American chestnut was one of the most valued hardwoods in the Eastern States. The commonly occurring tree was prized for its lumber, nuts, and tanning properties of the bark, as

well as for its shade. In 1904, disaster struck in the form of chestnut blight. The fungus—*Endothia parasitica*—came from Asia and spread rapidly. By the mid-1930's the entire range of chestnut trees was infected and by the 1940's most of these trees had vanished from American forests.

In the 1950's, a private, nonprofit group called Stronghold, Inc., began a project to collect American chestnuts and expose them to radiation in the hopes of creating a mutation of the genes which would resist the blight. In the past few decades, Stronghold, Inc., has been supplying several Eastern States with the irradiated seedlings for special plantings. The trees' resistance to the blight cannot be fully determined for many years.

Jeff Butcher,
public information officer, SCS, Lexington, Ky.

Forest Service Funds American Chestnut Research

Since 1977 the U.S. Department of Agriculture's Forest Service (FS), Northeastern Forest Experiment Station in Morgantown, W. Va., has been supporting research on the American chestnut blight. The FS has allocated annually about \$100,000 for nine cooperative studies to: West Virginia University, Morgantown, W. Va.; University of Kentucky, Lexington, Ky.; Duke University, Durham, N.C.; Utah State University, Logan, Utah; Virginia Polytechnic Institute and State University, Blacksburg, Va.; Concord College, Athens, W. Va.; and the FS Southeastern Forest Experiment Station, Asheville, N.C.

The main purpose of this research is to study a phenomenon called "hypovirulence," first observed in Italy in the early 1950's. Hypoviru-

lence is the term for less virulent strains of chestnut blight. In Europe, blighted chestnut trees were discovered with canker wounds that had calloused or closed. The canker closing was attributed to a natural occurrence of hypovirulent strains of blight fungus which overcame or minimized the effectiveness of the more virulent strains.

The nine cooperative studies include several approaches: evaluating natural methods for spreading weak strains of the blight, observing the interaction of different strains, testing hypovirulent strains on both blight resistant and susceptible trees, studying changes in the wood tissue of cankers, and examining variations in strength among different strains of the disease. The hypovirulent phenomenon has potential as a biological control of American chestnut blight, but many problems still remain to be solved.

In January 1978, West Virginia University and the FS sponsored a 2-day symposium on American chestnut research. Thirty-four papers were presented at the conference, including the findings of scientists from Italy and France. Discussions centered around the status of hypovirulence and of selecting, breeding, and using other techniques such as vegetative propagation and irradiation to produce blight-resistant trees. Also included were exchanges on the potential for biological control of chestnut blight in France, Italy, and the United States. Copies of the Proceedings of the American Chestnut Symposium are available from Clay Smith, Project Leader, Timber Management Research, USDA-Forest Service, Timber and Watershed Laboratory, P.O. Box 445, Parsons, W. Va. 26287.

SCS Information Officers Meet

Soil Conservation Service public information officers from 42 States and all four Technical Service Centers attended a biennial National SCS Information Conference and Workshop April 27 through May 2. The 5-day training session was held at the Center of Adult Education, on the College Park campus of the University of Maryland.

Among the 32 speakers and discussion leaders was NACD executive vice president Neil Sampson, who told a banquet audience that "the public is tired of hearing what's wrong with the environment. . . that it's so complicated it's hopeless. . . that we can't do anything about it. That's hogwash. . . In the soil conservation movement, we not only know what needs to be done, but we have hundreds of thousands of people who know how to do it. Our story is just lying there, waiting to be told."

Hillard Morris, chairman of the NACD education committee, said that SCS and the conservation districts need to "team up" on conservation education.

"Most district leaders," Morris said, "now recognize that environmental education is not just a kid's activity, but a necessary link in the continuity of the conservation program nationwide."

Other speakers at the information workshop included experts on new communications technology, public participation, and publicity.

The following is an interview with Sam Chinn, secretary-treasurer of the National Association of Conservation Districts (NACD).

Chinn owns a 300-acre vegetable farm in California's Salinas Valley. He has been a member of the Monterey Coast Resource Conservation District board of directors for 20 years. He has been a member of the California State Conservation Commission; vice president, president, and national councilman of the California Association of Conservation Districts; and a director of NACD. He is a member of the USDA Forest Service Advisory Committee to Secretary of Agriculture Bob Bergland and a Farm Bureau State director.

Sam Chinn on Conservation

Interview conducted
by Anne Schuhart



Sam Chinn grows enough carrots to fill 100 million jars of baby food a year. As rotation crops, he grows cardoni (shown here) and anise, exotic salad vegetables. He also grows

beets, parsley, lettuce, and other vegetables. The peat soils on his farm are rich and hold moisture well, producing sweet vegetables with a high nutrient content.

Q- *What are some of your thoughts about the way we approach conservation in the United States?*

A- What concerns me most is that we are getting too far away from the basic principles of soil and water conservation. In the old days we believed—and some of us old-timers still firmly believe—that to be assured of a good future supply of food and fiber, we must take care of the soil and water. In my opinion, districts and SCS are not putting enough emphasis on soil and water conservation to protect farm production. We may have put too much on recreation, urban conservation, water pollution, and such. Now I'm not criticizing these programs. They are good. But we risk diluting our basic interest in protecting our farmland from erosion.

Districts should reexamine their priorities. To get people to support the conservation program, we must make them understand that the resources of this country have to be protected to continue to grow food and fiber.

Q- *What should individual districts do?*

A- We have to get the conservation message to the young people. My district, for example, is making available any of the 500 films in our NACD library to the local schools. We give the catalog to the schools, they choose the films that meet their curriculums, order the films, show them, send them back to NACD, and send the district the bill. We're having excellent results.

Q- *Going back to the shift in emphasis, don't you think that districts have to change because of the regulatory efforts going on with 208 and so forth?*

A- What we need is better under-

standing. We have a good example in this area of California. People from the Association of Monterey Bay Area Governments came to enforce the Clean Water Act. They were pointing fingers at the farmers and saying, "You're the cause of pollution. The water came from your land."

The farmers rebelled against what many of us considered heavy-handed methods. The result was that SCS and districts got involved in the clean water program.

Today in our area we have one of the top clean water programs in the State. There are two advantages: SCS and districts already have the basic resource information, and SCS and districts have the expertise and the rapport with and confidence of the farmers and land users that we have earned over the years. A good SCS technician or soil conservationist can go into a farmer's field and say, "Hey, we've got to clean up this water. Here's the way we can do it," and the farmer listens.

Q- *So you think that confidence and rapport can take the place of regulations in some cases?*

A- I think confidence and rapport can delay the need for regulations. Under a voluntary program we can persuade a farmer to practice good conservation, use irrigation water efficiently, recycle his tailwater, and cut out using a lot of chemicals because many clean water and soil conservation practices also save energy. With the high cost of energy, a voluntary program is going to work. Farmers are being hit in the pocketbook. But the program has to be presented by technicians that the farmer has confidence in.

In a voluntary program, the job is to convince the farmer to spend his own money. If I don't have full confidence

in the technician the moment he walks onto my place, anything he tells me to do is going to go in one ear and out the other.

SCS and districts have to keep up our relationship with farmers and other land users. We cannot let the confidence and rapport slip away.

The voluntary cooperation between land users and districts and between districts and SCS is the basis of the conservation movement. We must make sure that young people coming into SCS, district positions, and State agencies understand this.

In my early days, our State conservationist told me, "Sam, there is no difference between SCS and districts. We are partners. To heck with the credit, we are going to get this job done." That philosophy has carried us through many rough years.

Young people becoming conservation workers need to maintain that close working relationship. They need to understand the voluntary program, the amount of time district directors or supervisors put into it, and the responsibilities district directors or supervisors have in developing policies and programs.

Q- *What are some of the techniques that seem effective to you to get the voluntary approach to work with land users?*

A- Above all, to get people to be active in the conservation program, you have to believe in it—actually believe in it, not just talk about it. You have to show your enthusiasm in your presentations, the way you talk to people, the way you demonstrate what the district is doing. Sincerity comes through to people.

Also, to get people involved, you have to make personal contacts. You have to call on people, tell them what kind of assistance you can provide,

and explain how conservation programs are going to benefit them.

You have to use the right approach; you have to use psychology; you have to use *salesmanship*. After all, you're trying to convince somebody to spend money. I know some SCS people who can go out with a farmer, point to a problem, and say, "We've got a program that will fit this." Pretty soon they make the farmer believe that he thought of the improvements. That's *salesmanship*.

Today if a technician sees irrigation water running down the road, he can say to the farmer, "Look at your energy bill." That's also good *salesmanship*.

As an example of a specific technique, the Extension Service has been successful because of its demonstration projects. In the early days, we had demonstration projects in soil and water conservation, but we've drifted away from them. Small-scale projects would be valuable as well as larger projects like Project Clearwater in Maryland and Save Our Soil in western Tennessee. Those huge projects are too expensive to do often, and I think we should give the small projects a higher priority.

Q- *What changes do you foresee in districts?*

A- Old-time district directors are dying off or retiring. All of the dedicated leaders in the conservation movement gave a tremendous amount of time and money. The new directors coming in today cannot afford to spend time and effort or the money that we put into the program because of inflation.

My son runs the farm now, but in my day when I gave up a day's work, I was only giving up maybe \$10. Now, if I were giving up a day's work, I would feel that I was giving up \$100

or \$150 worth of my time. With today's prices, how many \$150-days in lost management time can a farmer afford to give? He really has to be dedicated.

Q- *What's going to happen to districts if new directors cannot afford the time?*

A- More and more districts are hiring managers, paying them to attend meetings and take on some of the responsibilities of the directors. I think this trend will grow.

Even though the directors may be as careful as possible to hire a capable person, a manager is never that effective for some things, especially in supplying information to Congress or to State legislators. When you introduce yourself as a farmer and a district director, legislators know that you're unpaid, that you are there because you care about the issue. They're going to listen to you.

A district must have good working relationships with the county board of supervisors, planning boards, and other local officials, but again, all this takes time. District directors have to devote time to making friends with people in decisionmaking bodies, sometimes just to mingle with them and let them know the district is there.

Q- *Since many district directors have only a limited amount of time to volunteer, what do you think is the most effective way for them to use that time?*

A- Getting conservation on the land should not be my priority as a district director. That should be my priority as a good farmer.

I think a district director's best effort should go to developing and implementing programs for his local district. Then he should also help de-

velop broader area programs, propose them to the State, and help carry them out at the State level. As he "graduates" from the State to the national level, he should do the same thing. Each role is equally important.

Q- *How did you decide to become a farmer?*

A- I lost my left hand in a car accident when I was 13. The school counselor said the only thing I was good for was a position in accounting, pushing a pencil. That was the worst thing he could have told me—or maybe it was the best—because it gave me a challenge. I wanted to prove that I was not helpless.

I graduated from high school during the Depression and got a job in a bank in accounting. I quit after 2 months because there was no challenge. My father was a sharecropper, and I helped him on the farm, but he went broke. I found a job on another farm digging ditches with a shovel and doing it with one hand. Now that's quite a challenge!

I watched the foreman and learned to manage a farm by second-guessing him. I learned what agriculture is all about. I learned to love the soil. And for 3 years I learned from the bottom of the ditch up, you might say.

I became a tractor driver, then foreman. After about 6 years, in 1941, I married Bessie and the opportunity came for us to buy this farm. We were the first American Chinese permitted to own land in California by law.

Our farm was covered with brush and willows; it needed a lot of reclamation and improvement to make it productive. I had to learn the whole gamut of land management, agricultural land use, and marketing. Between the two of us we developed the

farm as it is today. It took a lot of work, but there is also a lot of love in it.

The first thing a young person going into agriculture needs is to love to farm and love the land. It takes quite a few years to become economically secure. You don't have a paycheck at the end of every month. You trade in a highly competitive market, and you work just as hard whether it's a good market or a bad one.

Q- *Why did you become involved in the conservation movement?*

A- About 20 years ago, I was getting successful at farming and my children were growing up. I thought, "I've done pretty well for myself and my family, but what have I done for my fellow man?" I learned about conservation districts, that their goals and activities were similar to my concerns. When a position on the Monterey Coast board came open, I volunteered.

When I was farming, I can honestly say that I gave 25 percent of my waking time to conservation work. And being State association president, State commissioner, watershed project chairman, and district president, all at once, 25 percent is a conservative estimate.

To this day, I have never regretted spending that much time on conservation work. Now nearly 100 percent of my time is devoted to NACD and other public services. Maybe it's corny, but I like to feel that I'm making a contribution. I am giving of myself something that money can't buy.

Anne Schuhart,
writer-editor, Information and Public Affairs, SCS,
Washington, D.C.

Impressions of China

In spring 1979, Sam Chinn and his wife Bessie were asked by the U.S. Department of State to host the Minister of Agriculture and a delegation of 23 other officials from the People's Republic of China. The Chinns gave the visiting Chinese a tour of their farm and of others in the Salinas Valley. The Chinns found the comparisons of agriculture so fascinating that their children sent them on a tour of China the following October.

Chinn relates some of his impressions and experiences from these visits:

- One of the operations the Chinese delegation saw in the Salinas Valley was a land leveling job using big tractors, 18-yard carryalls, and a laser beam as a level—very sophisticated, very modern. The delegation seemed interested but non-committal.

At first, I couldn't understand their reaction, because when I first saw a laser-beam level, I was very excited. But in China, I learned that they've been leveling land for centuries, the simple way.

They build a small levee all around a rolling field, 100 acres or so. They turn in the water to a certain depth. Then about 1,000 people, some with baskets and some with shovels, start to work on one end of the field. At a high spot they dig in, put the dirt in the baskets, and dump it into a low spot. They keep moving along, cutting

and filling as they go, using the water as a level. With that many people, they can move a hill in no time.

At the end of a quarter-mile run, there's not a puddle of water anywhere. They can even put it to grade.

- When I saw how much the Chinese were doing with their soil and water, I felt guilty that we haven't accomplished as much.

Flying north over the central plains, I could see all the watersheds, the dams, and more important, the canals, delivery systems, and diversion systems using and reusing this water.

I could see windbreaks planted where the Siberian winds come through. The Chinese have a tremendous tree planting program because so many trees were cut in the early 1900's. On street corners, by houses, in fields, on every open spot they are planting for beautification, windbreaks, and lumber.

- Another thing I noticed was the way they make roadcuts. First, they put all the topsoil in baskets and carry it into the fields. When they make the cut, they lower people down the sides with ropes to scratch all the loose soil off. Then they put in pipes for drainage and cement the whole face of the cut to prevent erosion.

- The Chinese don't have a voluntary conservation program as Americans know it. But they value their soil and water and they conserve them because it is a patriotic duty and a necessity.

Agriculture in China is very intense. They use every bit of available land and water for food production. Even the sides of little drainage ditches we noticed are terraced and farmed.

As another example, we use many drop structures in America to slow runoff, but in China they get double use out of them. Instead of having two or three on a slope, they may have as many as 10 with shallow holding ponds. They build the drop structures out of stone so that they can raise or lower the water level. They plant water potatoes in the ponds and in the summer when the ponds dry out, they harvest the potatoes, one of their main foods.

- The Chinese must do a good job of managing the water and soil for their survival, and they know it. These 900 million people know that their food comes from the soil and the land. They know where their priorities are. I wonder if we Americans really appreciate or care where our food comes from?

Sam Chinn gave visiting Chinese a close look at a U.S. family farm.



Can't Grow a Crop of Soil [3

by Robert J. Brejcha

"I can't grow a crop of topsoil, that's why I practice conservation tillage," said Jerry Ferril, a farmer in Excelsior Springs, Mo.

He is one of a rapidly growing number of farmers scrapping the plow for the chisel and disk. By using his equipment on a limited basis, he achieves partial cover of last year's crop residue, plus soil surface roughening. Thus tons of soil are saved when rain strikes the protected ground.

Ferril, a cooperator with the Clay County Soil and Water Conservation District since 1964, is quick to tell you a reduced tillage system isn't all gravy. "You must be a better manager," he advised, "particularly with weeds. Use the highest recommended herbicide mix. Crop residue intercepts some herbicide, so don't skimp on it."

He has read and heard that conservation tillage may lead to more insects but personally can't make the claim. Most references are to levels of infestations following grassy cover crops and are not applicable to his corn-corn-soybean rotation.

Ferril would rather talk about the advantages of his spring chisel-plant farming system, such as fuel savings because of fewer trips across the field, increased moisture, reduced labor requirements, and soil conservation, which is his main objective.

Ferril believes some type of reduced tillage can be suited to any farm but advises farmers not to "get locked in, but to be flexible." For example, in some wet spring seasons he can't get by with just chiseling and planting. "With moist ground I lightly disk to loosen and dry the soil. Use plain common sense, but always be conscious of the crop residue and what you are doing to it."

Soil Conservation Service District

Conservationist Calvin Phillips, who helped Ferril develop his conservation plan, agrees that more people must "learn to recognize and evaluate crop residues." He said you can estimate the quantity of crop residues by using crop yields as a base.

For each pound of corn produced there is 1 pound of residue (100 bushels of corn yield 6,000 pounds of residue). For each bushel of small grain there are 100 pounds of residue (30 bushels of wheat yield 3,000 pounds of residue). Soybean residue usually ranges from 1,500 to 2,200 pounds an acre.

You will also need to know what percent of the crop residue is covered by various farm implements. With the moldboard plow, 100 percent of residue will be covered; with a disk set for coverage, 75 percent; disk set with little pitch, 50 percent; field cultivator with sweeps, 40 percent; chisel plow with pointed shanks, 30 percent; and with the no-till method using a slot planter, only 5 percent of residue will be covered.

"Conservation tillage can be adapted to almost all soils and farming operations," explained Phillips. "However, it works best on moderately drained to well-drained soils." He strongly encourages those interested in trying the practice to contact their local conservation district office for soil information and help with onsite planning.

Soil loss for conventional tillage using the moldboard plow versus conservation tillage can be computed by plugging factors into the universal soil loss equation. The factors are soil type, length and percent of slope, planned crop rotation, estimated crop yield and rainfall data, and whether the field is on the contour or in contour stripcropping.

Using a typical field on Ferril's farm, soil loss can be computed and compared for conventional tillage using the moldboard plow versus conservation tillage.

The soil on Ferril's field is Lagonda-Grundy silt loam. The slope is 4 percent and Ferril's planned crop rotation is corn-corn-soybeans.

If the slope length is 250 feet (no terraces) and Ferril plows up and down the slope in the fall, his projected soil loss is 18.8 tons per acre per year. If he plows up and down the slope in the spring, the projected soil loss is 17.2 tons per acre per year. If he installs terraces, reducing the slope length to 90 feet, and plows on the contour in the fall, his projected soil loss is 6.5 tons per acre per year. But with no terraces and a slope length of 250 feet, he can chisel plant leaving 3,813 pounds of residue on the soil surface and his projected soil loss will be 3.4 tons per acre per year.

Thus he can reach a tolerable soil loss without installing terraces and without changing his crop rotation.

"Even on a field with longer slopes requiring supporting terraces, conservation tillage pays dividends," said Phillips. "It allows for greater terrace spacing, and at today's construction costs, that can be quite a money saver."

"You have to learn how to farm a hill and you have to learn how to farm bottomland—no one system will work every year and in every situation," added Ferril. "Be flexible but always practice conservation. Even the most advanced agricultural technologies in the world must first begin with protecting our land resource."

Robert J. Brejcha,
resource conservationist, SCS, Independence, Mo.

No-Till: A Personal View

by Rex Gogerty

Outside of some areas in the Eastern United States, no-till farming hasn't generally been accepted on large acreages. Most farmers are familiar with the concept, and in principle they endorse no-till as a great way to save soil—someone else's soil. The fact is that many farmers still regard no-till as risky.

My own thinking was similarly slanted until this year, when we planted 10 acres of corn into alfalfa and brome grass without prior tillage. No-till does offer the ultimate in erosion control for rowcropping sloped fields, but we found that eliminating tillage was a considerable step beyond just reducing tillage. In some ways, it was like learning to farm again.

Think small. My son Kevin and nephew Jack had little trouble following the first rule for no-till beginners; they planted a limited acreage as insurance against lack of beginner's luck. More specifically, we chose a 10-acre contour strip on a forty farthest from the road. It was mid-June before even the closest neighbors realized the field was planted to corn and not simply left for hay.

To the few who did inquire, I referred to the field as "the boys' experiment." The boys in turn countered by saying that this was something I'd been wanting to try for years.

If there was a problem, it was lack of expertise, not equipment. A sprayer and planter are the basic tools. Know-how and technical assistance are a little harder to come by. For example, we found that custom chemical applicators were generally reluctant to drive more than 10 miles to spray 10 acres. However, they did provide plenty of good advice concerning the somewhat tricky mixing and application of herbicides.

Experience available. A farm-chemical dealership oriented toward no-till often serves as a gathering place for no-till farmers with many years of combined experience. Some will be evangelists who are happy to provide do-and-don't tips that can save a novice no-tiller time and money. One of several such unpaid consultants in our area is Levi Willits of Union, Iowa, a no-till veteran (9 years of it). He talked us through a tour of his 125 acres of no-till corn and also remained on call during those difficult days when we had doubts about what we were doing.

Getting our no-till crop going went like this:

May 11: Applied 1 pint of 2,4-D amine per acre to begin the systemic kill of alfalfa. I had previously assumed that a single knockout application was needed, but all it takes is taming most of the alfalfa, with 2,4-D applied once or twice before planting.

May 12: Planted 26,000 kernels per acre while the topsoil was still moist from recent rains.

May 15: Applied a mixture of 1 quart of paraquat plus 4 pounds of atrazine and 2 quarts of Lasso per acre along with 10 ounces of X77 spreader per 100 gallons of water. Liquid nitrogen is often used as a carrier, but in this 3-year-old alfalfa stand additional nitrogen seemed unnecessary.

Costs even. Cost of the chemical treatments was about \$24 per acre, or similar to our cost for chemicals and tillage with a conventional seedbed.

May 17: Called Levi to ask why the forage didn't look as brown as it does in the ad photos. He recommended waiting 2 more days. We did and the alfalfa-brome—smelling by then like silage—wilted to a light brown.

The corn emerged somewhat slower than corn in the adjacent

plowed field, probably because the residue held temperatures down. But it also kept plenty of soil moisture around the seed.

About the time the alfalfa reached the dry, rustling-in-the-wind stage, the corn seedlings began to emerge unevenly, peeking from behind mats of grass or appearing normally in open areas. At first the field looked more like a mess than a miracle, but after 3 weeks we could row the corn and begin to talk to neighbors about "our successful no-till trial."

Few problems. We applied Banvel when the corn was in the five-leaf stage, and Sevin 3 weeks later to head off armyworms and aphids. In general weed control wasn't a problem. Nor was insect control, or getting a good stand. The no-till corn did as well as corn we planted in a conventional seedbed.

The toughest part was making the decision to plant without tillage in the first place. Fear of failure, of course, was the big reason that decision was so tough. We worried about everything from mediocre weed control to spotty stands. But reducing tillage—even down to zero— isn't as risky as we thought it was. After our trial, we decided that making no-till work just takes proper amounts of common sense, chemicals, and courage.

Rex Gogerty,
contributing editor to *The Furrow* and farmer,
Hubbard, Iowa.

Reprinted with permission from the November-December 1979 issue of *The Furrow*, Deere & Company, Moline, Ill.

Nominal Group Technique Helps Gain Public Participation in Watershed Planning

Local sponsors of a Public Law-566 watershed project in northwestern Minnesota and Soil Conservation Service employees tried something different to find out which of nine alternative solutions to local resource problems most of the people could accept. The sponsors of the Burnham Creek watershed project and SCS wanted to do more than hear from a few people who don't mind speaking to large groups, so they used a modified version of the nominal group technique at a public meeting.

They invited individuals, groups, and representatives of public agencies to a structured public meeting. Attached to the invitation letter was a copy of the preliminary investigation report. About 80 people attended the meeting.

The preliminary investigation for the PL-566 watershed protection and flood prevention project included nine proposed solutions for the resource problems and needs of the watershed area. The alternative proposals included structural measures, land treatment, non-structural measures, and the possibility of no project at all. Some of the solutions could increase economic returns to local people by reducing flooding, while others could contribute more to improving the environmental quality of the watershed.

To begin the meeting, members of the SCS watershed planning staff and the district conservationist explained the planning completed to date and the preliminary investigation report. A brief question and answer period followed.

After a break, the individuals formed into seven small discussion

groups. The sponsors of the meeting had assigned each participant a number at registration, and these numbers were used in forming the groups. The meeting sponsors had also previously selected seven group chairpersons. Each group then selected its own recorder.

Each participant recorded his or her views on the issues, concerns, or probable impacts of the nine different alternative solutions on worksheets distributed by the meeting sponsors. In roundrobin fashion, each participant stated his or her most important concern. The group recorder wrote the comments on a flip chart. Once recorded, a comment was not mentioned again during this step. The process was repeated until a list of 10 to 15 items were recorded, or the group voiced no more concerns.

Next, each participant had a chance to discuss his or her concern for up to 4 minutes. This was based on the theory that one generally has adequately expressed oneself in that amount of time and any further discussion tends to be repetitious.

In the last step, each participant ranked each of the nine alternative solutions, from the most desirable to the least desirable. The most desirable alternative solution was awarded nine points, the second most desirable solution was awarded eight points, and so on with the least desirable solution being awarded one point. The meeting sponsors then asked the participants to record on the worksheets comments on any other solutions or other combinations of measures they felt should be considered.

After collecting the worksheets, the meeting sponsors totaled the preferences and displayed the results. All of the original material was kept at the local SCS field office where it was

available for public review.

Later, the worksheets and flip chart pages were reproduced for further analysis and summarization by the planning staff. Summaries of issues, concerns, or probable impacts were also made.

The steering committee reviewed the preference summaries to determine which solution to recommend to the watershed project sponsors. In the preference ranking, Solution 6 received the most votes and Solution 7 received the second highest number of votes. However, neither solution was the majority's first choice. The committee concluded that very few people felt Solution 6 or 7 was the best, yet the majority of the people could accept either of these. Based on the committee's recommendation, the watershed project sponsors chose to follow Solution 6 which included two flood retarding structures, channel modification, a wildlife pond, and accelerated land treatment.

The use of a modification of the nominal group technique in the Burnham Creek public meeting provided useful information to decision-makers. Such techniques help watershed project planners to better solicit appropriate information from the public, evaluate the public's response, and document the public's participation.

"The Burnham Creek watershed planning meeting was one of the best public meetings I've ever attended," said Paul Brekken, chairperson of the steering committee and a local landowner. "It was well organized and gave all the participants equal opportunity to voice their opinions."

Victorin J. Ruhland,
resource conservationist, SCS, St. Paul, Minn.

CONSERVATION Research Roundup

Contributing editor, Russell Kaniuka, public information officer, SCS, Orono, Maine.

Study Shows No-Till Saves Energy

Although U.S. farmers now use only 2.5 percent of the Nation's energy to produce our abundant supplies of food and fiber, they're looking for ways to cut costs by conserving still more energy. To find out what tillage practices use the least energy to produce the most corn, Delaware Extension Agricultural Engineer Thomas H. Williams and Agronomist Dr. William H. Mitchell studied horsepower, fuel, and labor requirements for corn production using moldboard plow, chisel plow, and no-tillage on sandy soil at the University of Delaware's Georgetown Substation. They also compared several no-tillage cover crops and rates of broadcast nitrogen.

Comparing measurements of tractor horsepower, fuel consumption, and speed, as well as draft of pull-type implements, Mitchell and Williams found that the moldboard plow tillage system uses the most energy. Substituting the chisel plow for the moldboard plow results in a 20-percent reduction in fuel consumption for tillage operations through the planting of corn.

The most striking reduction in energy consumption, however, is achieved by the no-tillage system. It uses only 18 percent as much fuel as the moldboard plow system. Changing to no-tillage saves the equivalent of 6.1 gallons of gasoline per acre, and the change involves the use of only 1.8 gallons of gas equivalent in pesticides. If pesticides are included in the energy input figures, the net gain with no-till is 4.3 gallons of gas equivalent per acre.

The largest energy input in the no-till system is not pesticides, but nitrogen fertilizer. Adding biological nitrogen through the use of a vetch

cover crop makes it possible to reduce the energy input considerably. By substituting vetch and reducing the synthetic nitrogen input from 110 to 20 pounds per acre, the total energy requirement for no-tillage drops to the equivalent of 12.9 gallons of gas, or about 40 percent of that needed for the conventional moldboard plow system (32.2 gallons of gas).

Energy savings through the use of leguminous cover crops such as vetch are not limited to no-tillage systems, although the reduction in tillage operations usually results in more growing time for the cover crop. Eighty to 90 percent of the nitrogen in a vetch cover crop is located in the top growth, so the longer the cover crop can grow before it must be killed by herbicides, the more it produces.

Results of the 3-year cover crop nitrogen study at Georgetown show that cover crops can be an important aspect of a no-tillage system. Spring oats increased corn yields above the control (100 pounds of applied nitrogen but no cover crop) at all levels of applied nitrogen. This cover is normally killed by winter temperatures. Therefore, it must be planted early in order to develop a good ground cover during the fall months.

Even more striking was the spring oats-vetch mixture, which produced an average of 18.9 bushels more corn than the control.

It is obvious, say the researchers, that energy savings can be achieved by substitutions in energy inputs but care must be taken to avoid yield losses in the interest of energy conservation. Fortunately, Mitchell and Williams conclude, those practices which are most likely to increase net profits are also most likely to save energy.

A New Variety of Winter Rye

A new variety of winter rye will soon provide superior cover for the highly erodible potato lands of Aroostook County, Maine. Erosion on some fields has reached 150 tons per acre, but averages 6.8 tons per acre annually.

The new variety awaiting formal approval of its name, 'Aroostook,' can germinate when soil is as cool as 50° F., and can make vigorous growth when sown as late as September 30. By that date at least 50 percent of Aroostook County's potato crop usually has been harvested. In contrast, previously grown varieties required seeding no later than September 10 when almost all the potato crop is still in the ground.

Aroostook's late seeding date should enable growers to provide winter cover for 50,000 to 75,000 of the approximately 100,000 acres recently devoted to potatoes in Maine.

Aroostook was selected from among some 800 unnamed and named winter ryes, both foreign and domestic, initially evaluated at the Big Flats Plant Materials Center, Big Flats, N.Y., by Fred Gaffney, Soil Conservation Service plant materials specialist. The 43 most promising varieties and strains were then evaluated at the Aroostook State Farm in Presque Isle, Maine. In subsequent trials, Aroostook outperformed both the Tetra Tetkus and Balboa varieties in large-scale plantings.

Other desirable attributes of Aroostook include leafy and abundant early cover, exceptional winter hardiness, and early recovery of growth in the spring.

Moving?

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Soil Conservation Service
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AGR 101



Meetings

July	12-16	American Association of Nurserymen, Inc., Kansas City, Mo.
	13-26	XIV Congress of the International Society for Photogrammetry, Hamburg, Germany
	14	Future of American Agriculture as a Strategic Resource, The Conservation Foundation, Washington, D.C.
	26-31	National Environmental Health Association, Milwaukee, Wis.
	27-30	American Agricultural Economics Association, Urbana, Ill.
	29-August 1	Society for Range Management, Las Cruces, N. Mex.
August	3-6	National Farm and Power Equipment Dealers Association, Las Vegas, Nev.
	3-6	Soil Conservation Society of America, Dearborn, Mich.
	10-15	National Association of County Agricultural Agents, Oklahoma City, Okla.
	17-20	American Institute of Chemical Engineers, Portland, Oreg.
	18-21	Association of State and Interstate Water Pollution Control Administrators, Burlington, Vt.
	25-29	Federal Bar Association, Washington, D.C.
September	3-5	American Water Works Association, Chesapeake Section, Ocean City, Md.
	5-7	American Agricultural Economics Association, Denver, Colo.
	8-12	Environmental Protection Agency, International Symposium on Inland Waters and Lake Restoration, Portland, Maine
	16-20	American Horticultural Society, St. Louis, Mo.
	21-23	The Fertilizer Institute, San Francisco, Calif.
	21-24	American Fisheries Society, Louisville, Ky.
	21-25	Interstate Conference on Water Problems, Cincinnati, Ohio
	23-26	National Conference of Editorial Writers, Huntington, W. Va.
	24-26	International Association of Fish and Wildlife Agencies, Louisville, Ky.
	28-October 1	American Forestry Association, Dixville Notch, N.H.
	28-October 3	Water Pollution Control Federation, Las Vegas, Nev.

New Publications

Soil Processes

by Brian J. Knapp

This book approaches the study of soils by concentrating on the fundamental formative processes and how changes in their balance produce a wide spectrum of soil profiles. It also shows how soil study applies directly to the fields of agriculture and environmental conservation.

The 72 pages include charts; color and black and white photos; and appendixes for soil horizon nomenclature, soil reaction, summary of some major soil

group characteristics, and the distribution of some major soil groups.

This book is written for undergraduate students and for those who are interested in a summary of the field of pedology.

Published by Allen & Unwin, Inc., Winchester, Mass. 1979. \$5 paper.

Peat: Industrialized Chemistry and Technology

by Charles H. Fuchsman

This book attempts to enable chemists, engineers, and managers in North America and Western Europe assess the industrial potential of peat. The

technical substance of the text concerns: (1) Solvent extraction processes, leading to the production of waxes and byproducts of potential interest to the pharmaceutical industry; (2) acid hydrolysis, producing sugars for yeast production for high-protein livestock feed, and alcohol; (3) pyrolysis, leading to the production of specialty high-purity metallurgical coke, and activated carbon; and (4) the alkaline extraction of humic acids, leading to a variety of surface active agents, viscosity modifiers, and possible ingredients for the plastics and adhesives industries.

Published by Academic Press, Inc., New York, N.Y. 1980. \$28 hardback.

Recent Soil Surveys Published

by the Soil Conservation Service

Colorado: Rio Grande County Area.

Illinois: Clark County.

Indiana: Dubois County.

Kentucky: Grant and Pendleton Counties.

Missouri: Johnson County.

Ohio: Franklin County and Pickaway County.

South Carolina: Greenwood and McCormick Counties.

Texas: Grayson County.

Utah: San Juan County.

Virginia: Hanover County.

Wisconsin: Calumet and Manitowoc Counties, Dodge County, and Sauk County.